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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,693	07/10/2003	Michel J.F. Dignonnet	STANF.130A	1637
20995	7590	05/18/2005	EXAMINER	
KNOBBE MARTENS OLSON & BEAR LLP			CHIAM, DINH D	
2040 MAIN STREET			ART UNIT	
FOURTEENTH FLOOR			PAPER NUMBER	
IRVINE, CA 92614			2883	

DATE MAILED: 05/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/616,693

Applicant(s)

DIGONNET, MICHEL J.F.

Examiner

Erin D. Chiem

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/14/03 AND 1/26/04</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Species I drawn to claims 2-11 in the reply filed on April 27, 2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Priority

This application claims priority of provisional application filed on August 20, 2002 is acknowledged.

Claim Objections

2. Claim 1 is objected to because of the following informalities: In the 3rd paragraph of the claim, Applicant claims the first port of directional coupler is optically coupled to the light source and in the 2nd paragraph the Applicant claims the hollow-core photonic-bandgap fiber is coupled to the second port of the directional coupler; the citation of the "first port", "second port", and "third port" lacks antecedent basis in the 3rd paragraph since the photonic-bandgap fiber does not couple to the directional coupler that is directly coupled to the light source. Applicant is required to provide clarification to the plurality of directional couplers and the plurality of the "first port," "second port," and "third port." Appropriate correction is required.

Claim Rejections - 35 USC § 102

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3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, and 8-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Greenaway et al. (US 6,389,187 B1).

5. Greenaway et al. teach an optical sensor comprising a broadband light source having a spectral distribution with a full width at half maximum at 18 nanometer (col. 4 line 55-57) and (col. 6 line 65 – col. 7 line 3);

6. A directional coupler having at least three ports wherein the first port is coupled to the light source and split the signal and transmits them into a second and third port (col. 5, line 22-31);

7. a hollow core photonic bandgap fiber having a hollow core surrounded by a cladding (col. 4, line 29-35, 44-45) confining the counterpropagating second optical signal and third optical signal within the hollow core (col. 5, line 67-col. 6, line 14); and

8. an optical detector position to receive the signal from the second and third port (col. 4, line 58-col. 5, line 17).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 4-7 rejected under 35 U.S.C. 103(a) as being unpatentable over Michal et al (US 6,108,086).

11. Greenaway et al teach an optical sensor comprising broadband light source coupled to a directional coupler and the single input signal is further split into two signals and transmit to the hollow core photonic bandgap fiber. However, Greenaway et al. do not teach the light source mean wavelength is stable at least ± 0.1 - ± 100 parts per million.

12. Michal et al. disclose an optic gyroscopes comprising a broadband source comprising a superluminescent fiber source, erbium doped fiber, having bandwidth of 8 nm reduces the centroid wavelength shift to less than 0.1 ppm from 500 ppm for the purpose of preserving the integrity of the broadband fiber light signal. In harsh environments, when Erbium doped fiber is exposed to ionizing radiation, the broadband fiber source loses the wide spectral width, therefore maintaining the light source mean wavelength stability at the various range from ± 0.1 - ± 100 parts per million is critical in preserving the signal integrity and the broad spectrum of the light source.

13. Since Greenaway et al. and Michal et al. are both from the same field of endeavor, the purpose disclosed by Michal et al. would have been recognized in the pertinent art of Greenaway et al.

14. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide bandpass filters centered at 1557 nm having a bandwidth of 8 nm reduces the centroid wavelength shift to less than 0.1 ppm from previously observed stability at 500 ppm. By maintaining the centroid wavelength stability at fractional ppm allows the

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broadband light source to maintain the broad spectrum of light since Erbium doped fiber is sensitive to exposure to ionizing radiation.

15. Claims 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greenaway et al. in view of Sanders et al. (US 5,563,705).

16. Greenaway et al teach an optical sensor comprising broadband light source coupled to a directional coupler and the single input signal is further split into two signals and transmit to the hollow core photonic bandgap fiber. However, Greenaway et al. do not teach the sensor comprising an amplitude modulator and a frequency modulator external to the light source.

17. Sanders et al. teach a sensor comprising a frequency modulator and an amplitude modulator external to the light source for the purpose of controlling the frequency, due to the phase modulator, and the amplitude, due to the Kerr effect.

18. Since Greenaway et al. and Sanders et al. are both from the same field of endeavor, the purpose disclosed by Sanders et al. would have been recognized in the pertinent art of Greenaway et al.

19. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide amplitude and frequency modulators externally from the light source for 1) modulators can reduce the amplitude and frequency of the signal to fundamental harmonics that would be more manageable (col. 2, line 7-16); and 2) the information that is extracted by modulating the amplitude to the fundamental harmonics and modulating the frequency at a given wavelength and send those information to the coil and the phase difference between the electromagnetic waves of the original light source and of the signal that was

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electromagnetically impinged upon can be detected by the Sagnac effect. In essence, this is the fundamental operation of an optical gyroscope (col. 5, line 35-col. 6, line 13).

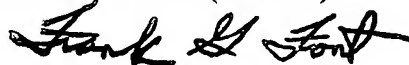
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin D. Chiem whose telephone number is (571) 272-3102. The examiner can normally be reached on Monday - Thursday 9AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Erin D Chiem
Examiner
Art Unit 2883



Frank G. Font
Supervisory Primary Examiner
Technology Center 2800